

GENERAL INFORMATION:

The Nos. 650, 650-5 and 650-12EX provide 17 zones of wide-angle coverage with range of up to 50 feet (15.2m). Models 651, 651-6 and 651-12EX offer 6 long range zones with reduced angle coverage up to 100 feet (30.5m).

All models have the following important features:

- High precision, computer-designed parabolic optical system.
- Dual element pyro-electric sensor.
- Precision die-cast optical head for maximum RFI protection and accurate optical alignment.
- Zone locator for clear visual indication of zone coverage.
- Pre-declined zones for fast and easy installation.
- Separate pan and tilt control for convenient pattern adjustment to achieve desired coverage or avoid hazards.
- Zone direction not observable when cover is in place.
- Wall/corner mounting plate for fast and easy installation.
- Full LED memory/walk-test/night-disable capability. (LED on Nos. 650, 651 will not be active when AC is absent and thus provides AC supervision.)

The Nos. 650 and 651 must be powered from the No. 1319 plug-in transformer (included) and contain a rechargeable standby power supply. The Nos. 650-6, 651-6, 650-12EX require power from a 6V.DC and 12V.DC source respectively that can provide at least 4 hrs. of standby power. Except as noted herein, these instructions apply equally to the Nos. 650, 650-6, 650-12EX, 651, 651-6 and 651-12EX.

Normally, the detector will operate at all times regardless of whether the control to which it is connected is ARMED or DISARMED. Whenever (and while) motion is detected, the unit's LED will light and its relay contacts will transfer. Alternatively, when the detector is connected to a control that can provide a suitable switched voltage signal to indicate the control's ARMED or DISARMED state, the detector can be programmed to provide optional modes of LED and relay operation. See OPTIONAL MODES herein.

The Detectors have an additional provision for use of an external LED which can duplicate remotely the indication of the detector's built-in LED.

PRINCIPLE OF OPERATION:

The optical system divides the area into a series of protective zones. A special sensor measures the level of far infrared energy in each zone. When an intruder crosses or enters any zone the resulting change in infrared energy is detected and an alarm condition will exist.

The sensor does not respond to visible light or changes in the background temperature of the room.

Because a passive infrared device employs no transmission of any kind, any number of units may be used in the same area.

Far infrared energy does not penetrate most building materials (even window glass) so the unit responds only to human movements inside the room.

COVERAGE CONSIDERATIONS AND TYPICAL LAYOUTS:

Nos. 650, 650-6, 650-12EX: The pattern of protection provided by the 650 series includes nine main zones which span an angle of 75°; five intermediate zones aligned in direction with alternate main zones but angled somewhat downward from the main zones; and three downward zones aligned in the direction of the 2nd, 5th and 8th main zones, completing the pattern of protection. See Diagrams 1 and 3.

The entire pattern may be panned left or right up to 20°.

The optical system has been designed to give proper coverage based upon a typical mounting height of 7'6" (2.3m). However, the unit may be mounted at any height between 7' (2.1m) and 9' (2.7m) to achieve a proper 50' (15.2m) pattern.

If the unit is to be mounted higher than 9' (2.7m), perhaps as high as 12' (3.7m), or if it is desired to obtain a range of less than 50' (15.2m) for a particular installation, the optical head may be tilted downward. Combinations of mounting height and "tilt" can be used to obtain coverages as shown in Diagram 3. To adjust the tilt of the optical head, grasp the metal casting firmly between thumb and index finger at both sides (where a ridge is provided); pull gently forward until the assembly is free, then set the tabs on the casting into the desired notches on the bracket and release. See Diagram 2. **IMPORTANT:** Do not touch the reflector or sensor surfaces.

Nos. 651, 651-6, 651-12EX: The pattern of protection provided by the 651 series includes six zones positioned in a pattern which is ideal for the protection of hallways, corridors or aisles.

The pattern consists of a main zone; two intermediate zones, on either side of the main zone and angled slightly below the main zone; and three downward zones, one aligned with and below the main zone and two to the outside and below the intermediate zones. See Diagrams 4 and 5.

The entire pattern may be panned left or right up to 20°.

The optical system has been designed to give proper coverage based upon the typical mounting height of 7'6" (2.3m). However, the unit may be mounted at any height between 7' (2.1m) and 9' (2.7m) to achieve the proper 100' (30.5m) pattern. See Diagram 5a.

If the unit is to be mounted higher than 9' (2.7m), perhaps as high as 13' (4.0m), then the full range may be obtained by tilting the optical assembly forward one notch (using the method described above). This will provide proper coverage for mounting heights between 10' (3.0m) and 13' (4.0m). See Diagram 5c. Reduced range may be obtained, if desired, by mounting the unit higher and aiming the optical assembly fully downward. See Diagram 5e.

"Dead" Zone Caution: Note in Diagram 3 and 5 that for several tilt position/mounting height combinations there are indicated "dead zones" within which a person could be moving and not be detected by any of the unit's coverage zones. In general, these dead zones are apt to be present between the intermediate and downward zones as the unit's mounting height is increased and its coverage pattern is tilted downward.

Selecting a Mounting Location:

Because the Nos. 650 and 651 Series Passive Infrared Detectors respond to changes in energy which occur when an intruder moves into or out of a zone, best coverage will be obtained if the mounting site is selected such that the likely direction of intruder motion is ACROSS the pattern. See Diagrams 6a, b and c.

In a hallway or aisle, a No. 651 series unit should be aimed directly down the center of the area; the intermediate zones will prevent an intruder from avoiding detection by following the wall. See Diagram 6d.

An alternate approach is to angle the main zone from "corner-to-corner". See Diagram 6e.

INSTALLATION AND WIRING:

Passive I.R. units are remarkably resistant to false alarm hazards but the following recommendations should be observed:

Avoid locating unit where central heating radiators, quartz (or other radiant) heaters, live fires or ventilating registers could be within the protective zones.

Avoid locating the unit in direct sunlight or directly above strong sources of heat.

Avoid locating unit on unstable surfaces.

Mounting:

IMPORTANT: Be careful during installation or adjustment NOT TO TOUCH THE REFLECTOR OR SENSOR SURFACES. WHEN POSITIONING THE HEAD ASSEMBLY GRIP THE DIE-CAST BODY ONLY, AS SHOWN IN DIAGRAM 2.

1. Mount the wall plate to a firm and vertical surface (flat on wall or in corner) at the recommended height (see previous section). Orient the plate so that its unit mounting hooks are at the bottom. If wiring is provided from a hole in the mounting surface, center the mounting plate with the bottom of the plate just above the hole. This will align the wires with the wiring entry in the case when the unit is secured. See Diagram 7.
2. Remove front cover by loosening the retaining screw.
3. Push the two special hex head screws, provided, through the two retainer type mounting holes at rear of the plastic case, if this has not already been done.
4. Attach unit to wall plate, as follows: Engage lower hooks on wall plate into case bottom (see Diagram 7) and secure unit to wall plate with the two hex head screws provided. **Note:** Move detector head left or right to gain access to screws. Do not remove detector head from unit as damage to mirror may result.

Note: For recessed mounting, the No. 650MK Flush Mounting Kit is available. Follow the instructions accompanying it.

Selecting a Mounting Location:

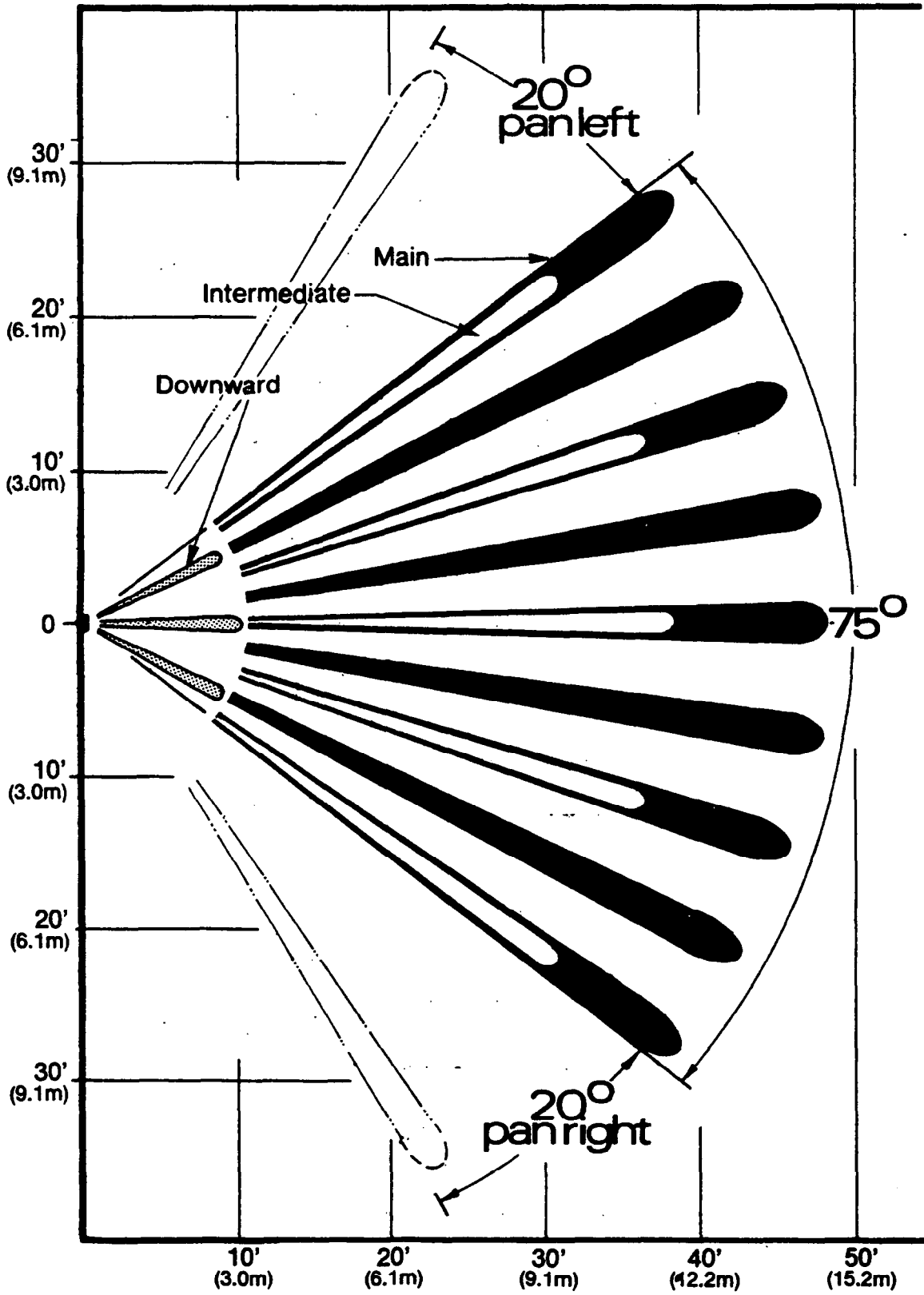
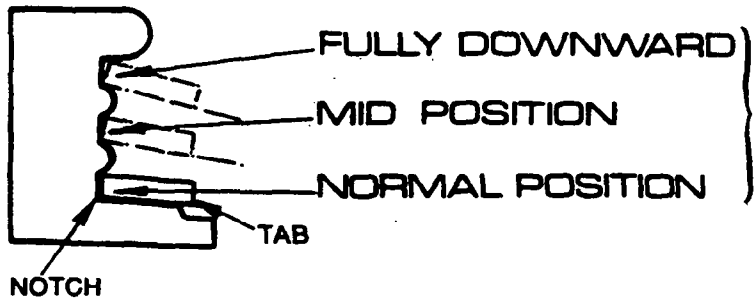
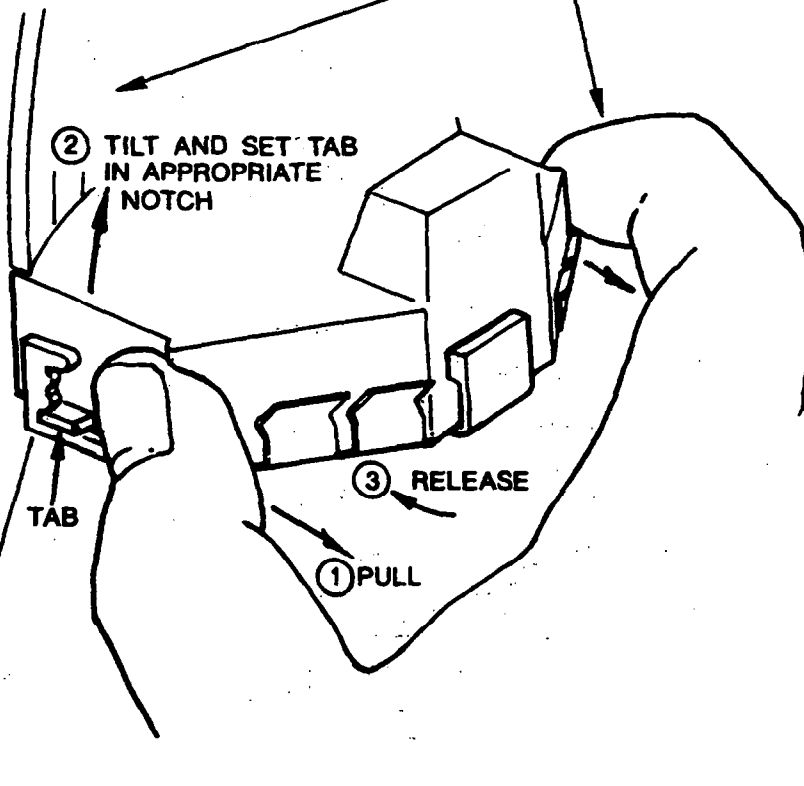


Diagram 1: PROTECTION ZONES (650, 650-6, 650-12EX)

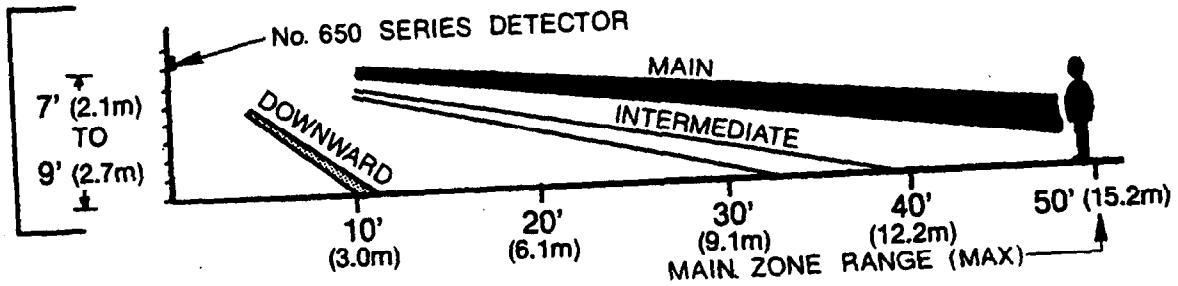
IMPORTANT!
DO NOT TOUCH REFLECTOR
OR SENSOR SURFACES.
GRIP ONLY DIE CAST BODY OF
UNIT, AS SHOWN.



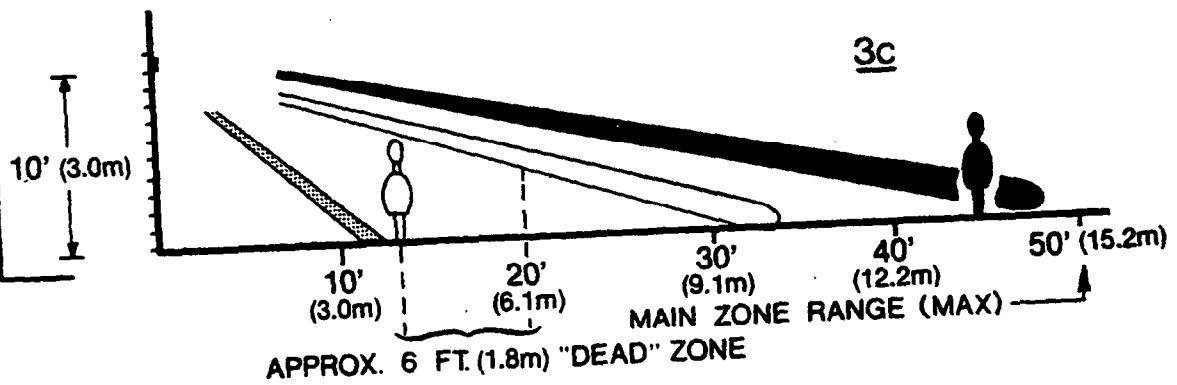
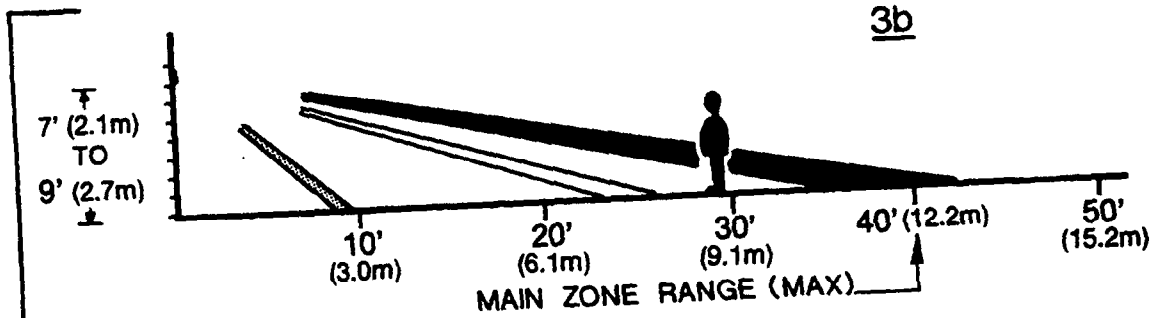
Caution: Make sure
tab is placed in
same slot on both
sides of unit.

Diagram 2: TILT POSITIONS (ALL MODELS)

NORMAL
TILT
POSITION



MID
TILT
POSITION



FULLY
DOWNWARD
TILT
POSITION

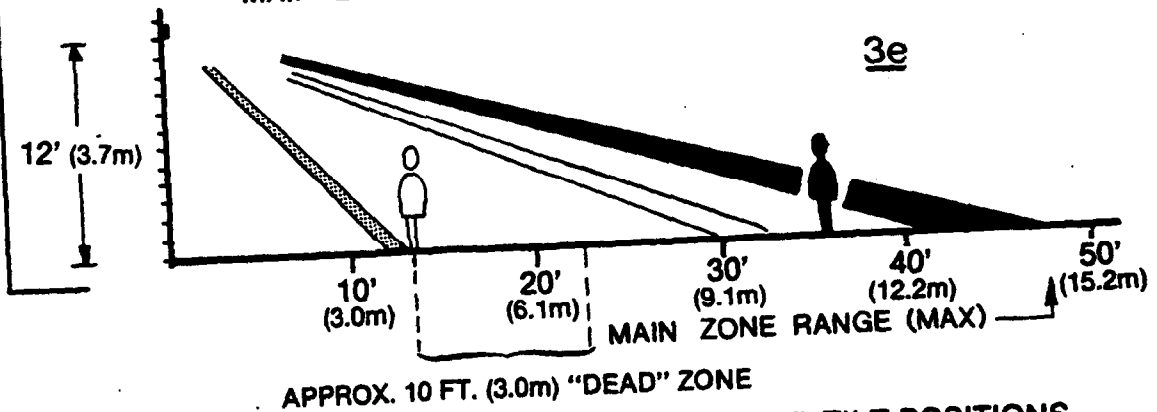
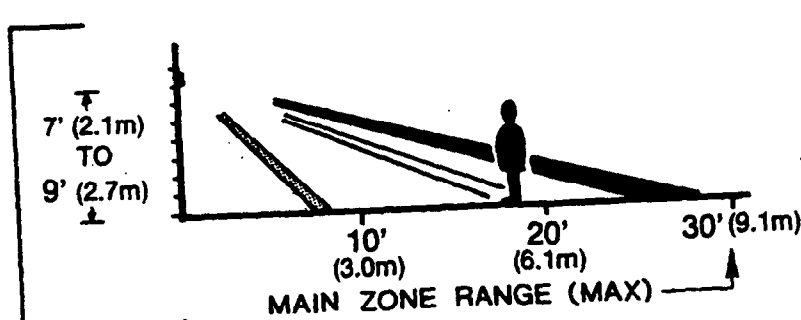


Diagram 3: RANGES AT VARIOUS MOUNTING HEIGHTS AND TILT POSITIONS
(650, 650-6, 650-12EX)

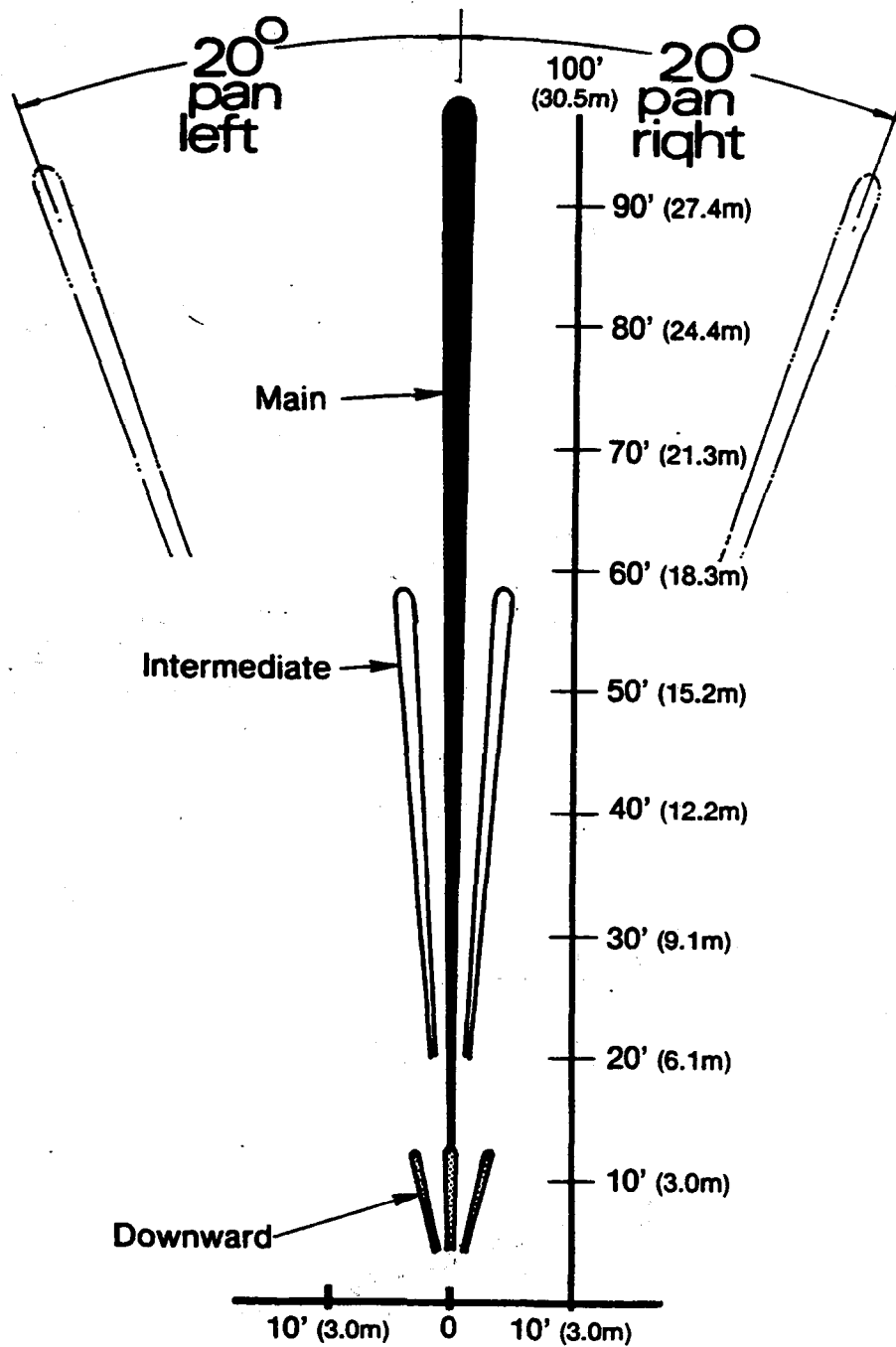


Diagram 4: PROTECTION ZONES (651, 651-6, 651-12EX)

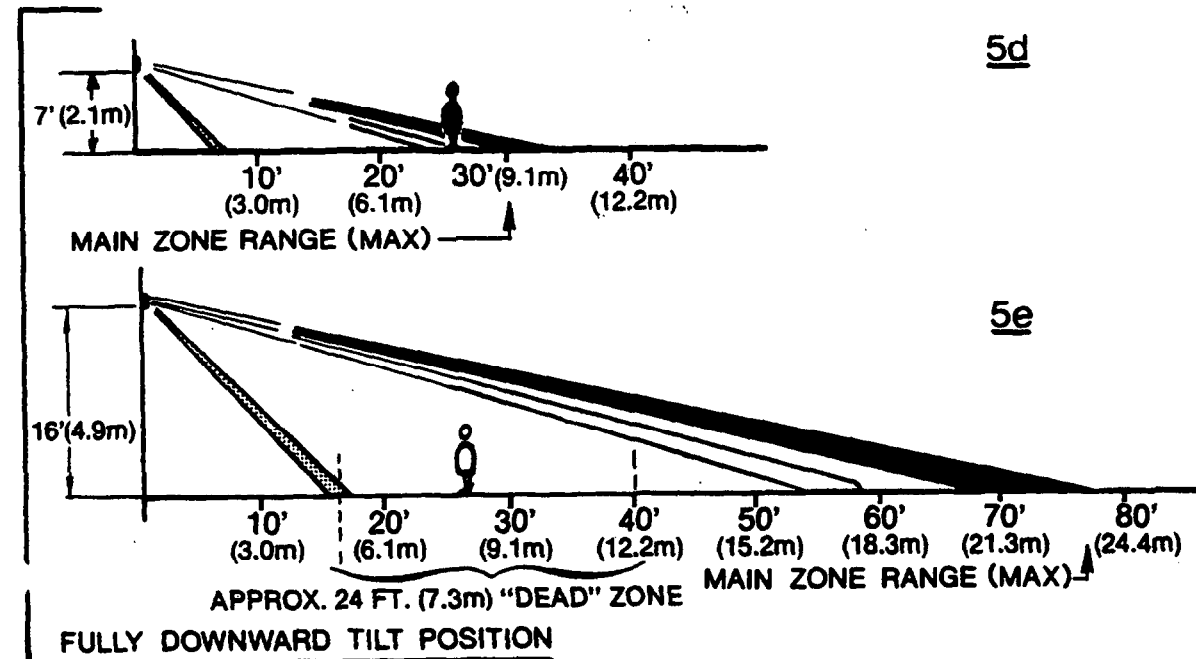
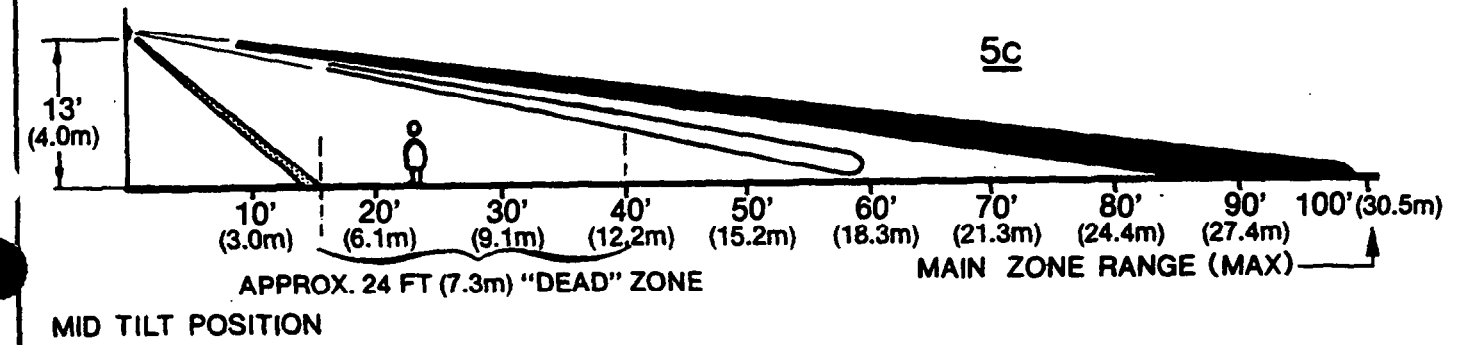
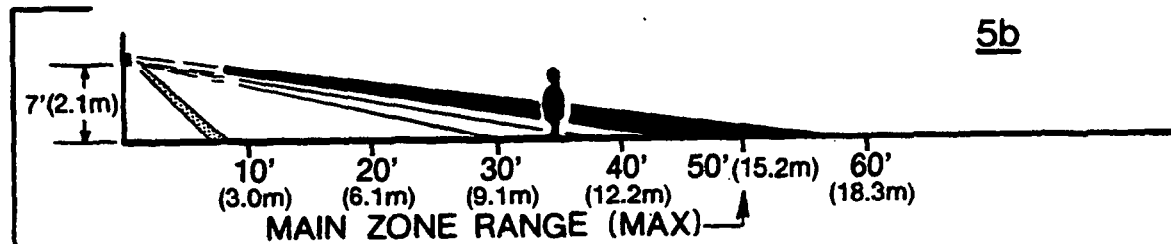
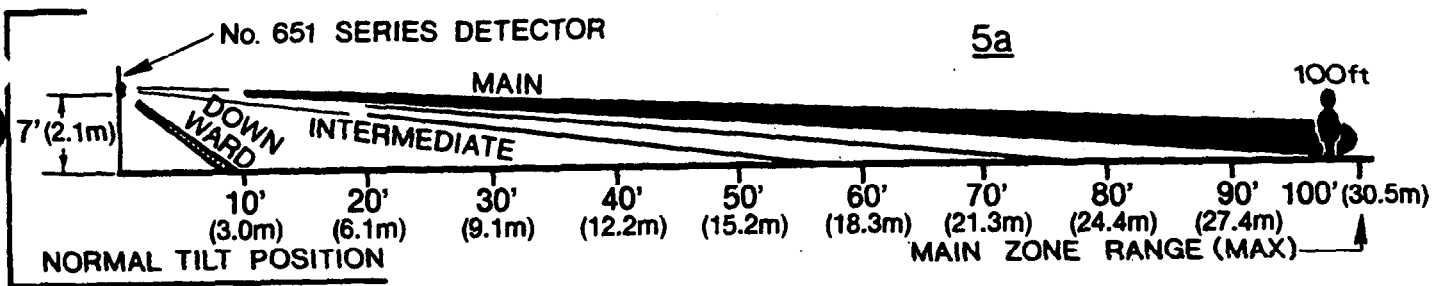


Diagram 5: RANGES AT VARIOUS MOUNTING HEIGHTS AND TILT POSITIONS (651, 651-6, 651-12EX)

Wiring Connections:

Use only the wiring entry at the lower rear of the case and carefully feed the wires along the underside of the printed circuit board. Avoid contact between bare conductors, screws or metal parts likely to contact the printed circuit.

Avoid unnecessary splices and loops within the unit. Check all connections carefully.

See Diagram 8 (for No. 650 or 651) or 9 (for No. 650-6, 651-6, 650-12EX or 651-12EX).

See Diagrams 8 and 9. Connections should be made in this order:

1. **Alarm Terminals:** To connect a closed circuit protective loop, see Diagram. On "-6" and "-12EX" units connect tamper switch circuitry as desired.
2. **Optional External LED:** Connect as shown in Diagram. Also cut the YELLOW jumper on the PC board. **Note:** The side of the LED that is **not** connected to the EXT LED terminal may be connected directly to the DC source if the run is shorter than from the detector (and if, on No. 650 or 651 units, a control signal is also used). **OBSERVE POLARITY!**
3. **Control Signal Terminals and Options:** See OPTIONAL OPERATING MODES. If one of the options is to be selected, run the necessary lead(s) between the detector(s) and the main control and cut the necessary jumpers.
4. a. **(Nos. 650 and 651 Only): 6.5V.AC Terminals:** Connect **only** the No. 1319 Transformer (supplied to these terminals and plug it into a 120V.AC outlet that is ON for 25 hours a day. **Do not substitute a different transformer** or improper operation or equipment damage may result. Make certain that the outlet cannot accidentally be turned OFF, so that the No. 650 or 651's built-in standby battery remains charged. The tab provided on the transformer **MUST** be used to secure it in place with the outlet cover mounting screw. **Caution:** No more than one unit may be connected to the transformer.
WARNING: IF A NO. 1320 TRANSFORMER IS USED, IT WILL DAMAGE THE UNIT!
 - b. **(Nos. 650-6 and 651-6 Only) 6V.DC Terminals** Connect these terminals to a 6V.DC source that can provide 40 mA continuously. **Observe polarity!** Continuous auxiliary capacities for some typical controls are:

No. 1021, 4021:	400 mA	No. 4080	: 500 mA
No. 1022	: 150 mA	No. 330R-25, 340R-25:	250 mA
No. 1023	: 350 mA	No. 332R-50, 342R-50:	750 mA
No. 1024	: 200 mA		
No. 1025	: 220 mA		
 - c. **(Nos. 650-12EX, 651-12EX Only) 12V.DC Terminals:** Connect these terminals to a 12V.DC source that can provide 30 mA continuously. **Observe polarity!** Continuous auxiliary capacities for some typical controls are:

No. 1021-12, 4021-12:	400 mA	No. 1025-12, 1025EX12:	220 mA
No. 1022-12	: 300 mA	No. 4080-12, 4080EU	: 500 mA
No. 1023-12	: 550 mA	No. 4090	: 500 mA
5. **(Nos. 650 and 651 Only) Battery Lead:** Disconnect the unit's BROWN battery lead from the STORAGE POST on the PC board and connect it to the + V POST (see Diagram 8). **If unit is removed from service for any reason, BROWN lead must be replaced on STORAGE POST to prevent damage to battery (damage will not result from normal power outages).**

OPTIONAL OPERATIONAL MODES:

As shipped from Ademco, each detector's LED and relay will function together, at all times, regardless of whether the main protective system control is ARMED or DISARMED. While motion is detected, the LED will light and the relay contacts will transfer.

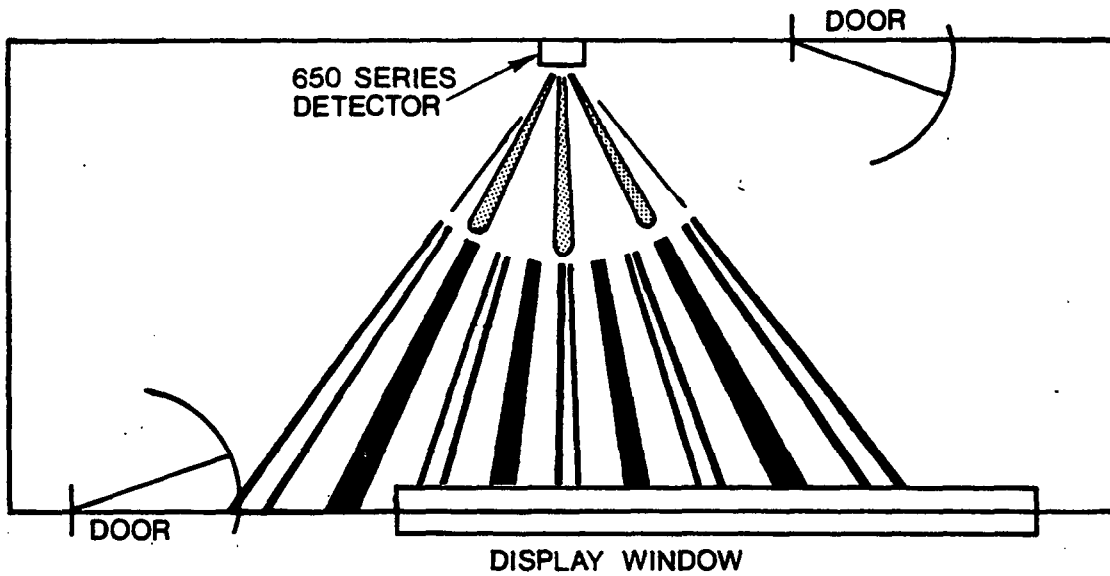
When used with a control that can provide a suitable switched voltage to the detector's CONTROL SIGNAL TERMINAL to signal whether the control is ARMED or DISARMED, the detector can be programmed (by cutting various combinations of jumpers on the unit's PC board) to provide optional modes of operation as described in this section.

Switched Voltage for CONTROL SIGNAL Terminal:

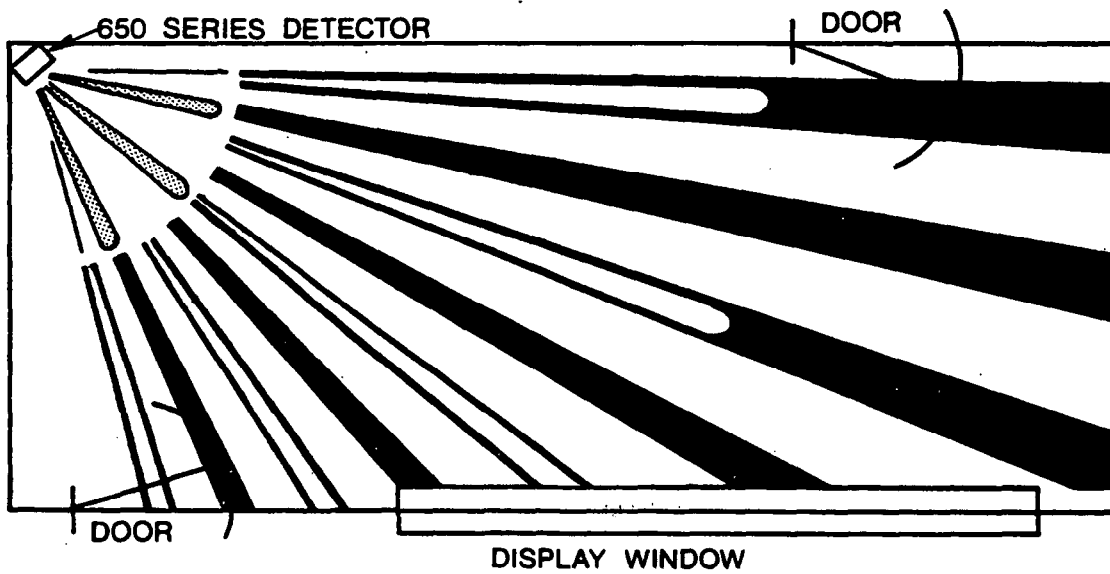
CAUTION: Before cutting jumpers, make sure that the control can provide the proper switched voltage signal to the + CONTROL SIGNAL TERMINAL, as shown in the following table:

REQUIRED + CONTROL VOLTAGE SIGNAL			
MODEL NO.	SYSTEM DISARMED	SYSTEM ARMED	INPUT IMPEDANCE
650, 651, 650-6, 651-6	+ 6V	0V	22K ohms
650-12EX, 651-12EX	0V 80	+ 12V	45K ohms

6a
NOT
IDEAL



6b
BETTER



6c
BEST

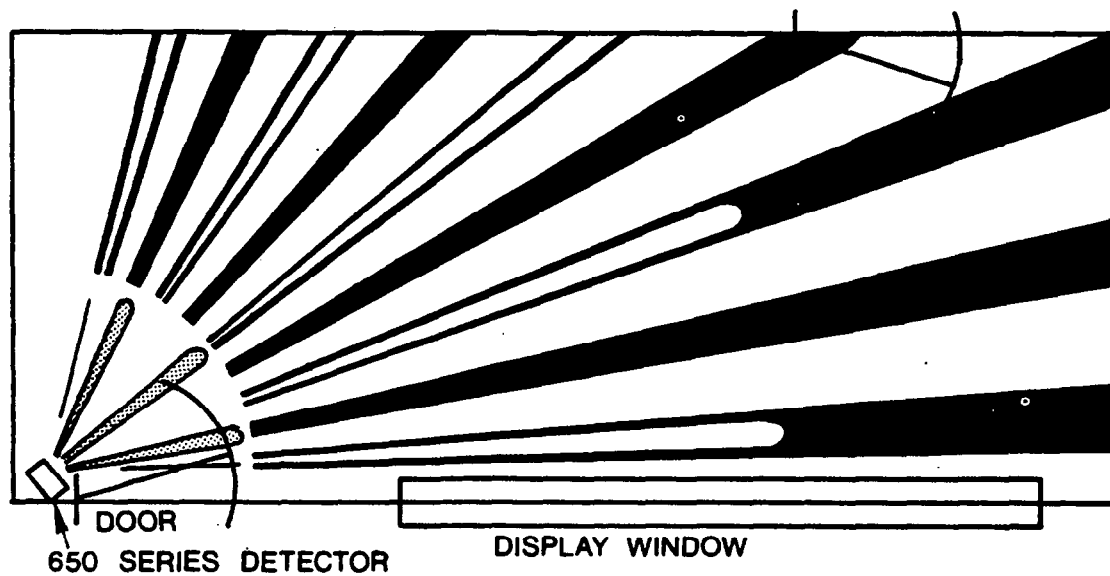
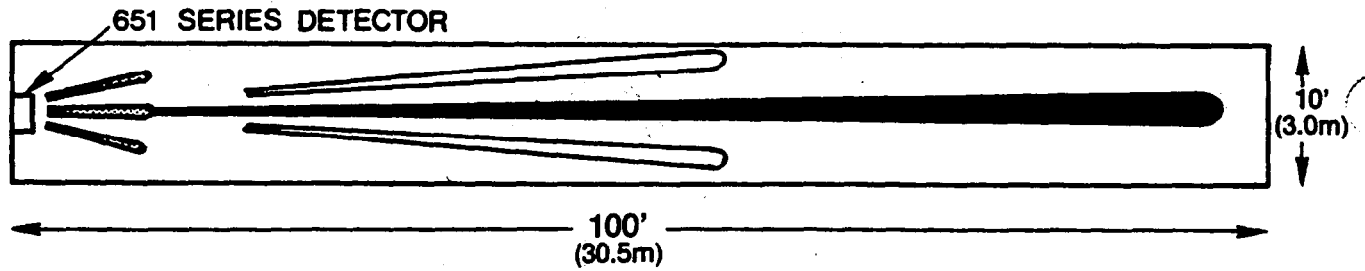
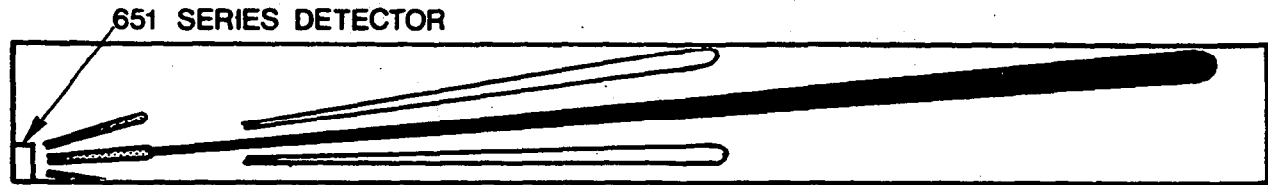


Diagram 6: TYPICAL LAYOUTS

(cont'd)



6d: HALLWAY OR AISLE COVERAGE



6e: CORNER TO CORNER IN HALLWAY

**Note: 651 IS MOUNTED ON END WALL
AND PANNED LEFT. DO NOT
CORNER MOUNT IN LONG HALLWAYS.**

Diagram 6: TYPICAL LAYOUTS

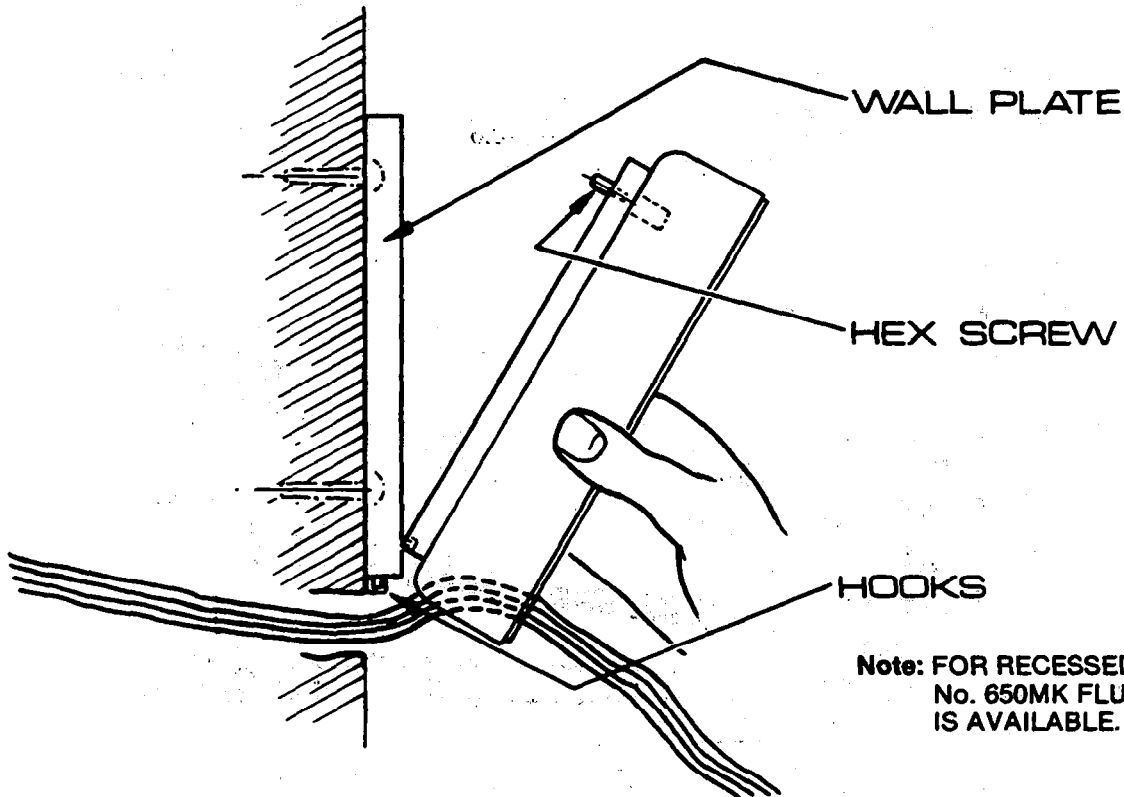


Diagram 7: MOUNTING DETAILS

Diagram 10 shows typical sources of switched positive (+) control voltage signal. Note that some controls permit direct connection to the detector and others require a No. 688 (or 688-12) Opening/Closing Switching Module to be used between the control and the detector.

Note also that AC Powered detectors (Nos. 650, 651) may obtain DC control signals from 12 volt controls as well as from 6 volt controls.

Options:

The options are programmed by making the proper CONTROL SIGNAL connection(s) and cutting the colored jumper(s) on the PC board. See Diagram 8 or 9 for locations and Diagram 11 for summaries of the options.

CAUTION: Any jumper that is cut must have its loose ends taped (or otherwise insulated) to prevent accidental electrical contact with other points.

- 1. Day Relay Disable Only Option (Nos. 650, 650-6, 651, 651-6 only):** In this mode, the LED and detector relay remain active during the ARMED period, but during the DISARMED period, only the LED remains active. The relay is silent and inactive (remains locked in). **TO SELECT: ONLY PROPER CONTROL SIGNAL VOLTAGE IS REQUIRED. DO NOT CUT ANY JUMPERS.**
- 2. Night LED Disable Option (all units):** In this mode the LED (and any remote LED) will be Inactive (remain OFF) during the ARMED period and active (indicate when motion is being detected) during the DISARMED period. During the DISARMED period the relay will be silent and inactive (remain locked in) on Nos. 650, 650-6, 651, 651-6 only. **TO SELECT: Nos. 650, 650-6, 651, 651-6: CUT THE GREEN JUMPER. Nos. 650-12EX, 651-12EX: ONLY PROPER CONTROL SIGNAL VOLTAGE IS REQUIRED.**
- 3. Intrusion Memory Option (all units):** In this mode the LED(s) will be inactive during the ARMED period but should an intrusion occur in the protected area, the alarm relay will transfer and this fact will be stored in the detector's memory. When the system is DISARMED, the LED on any detector which had signaled and stored an alarm will light and remain lit until cleared. **The LED memory can be cleared by momentarily ARMING and then DISARMING the system.** The LED(s) will then respond ON and OFF normally to motion detected in the protected area during the DISARMED period. During the DISARMED period the relay will be silent and inactive (remain locked in) on Nos. 650, 650-6, 651, 651-6 only. **TO SELECT: Nos. 650, 650-6, 651, 651-6: CUT THE RED AND GREEN JUMPERS. Nos. 650-12EX, 651-12EX: CUT THE RED JUMPER.**

Note: With a No. 1000, 1003, 1005 or 1020 Deluxe Control: During disarming, when the panel's keyswitch is turned from ON (ARMED) to CIRCUIT TEST, the LED on any detector which had signaled and stored an alarm will light. A pause at CIRCUIT TEST with permit examination of each detector for such an intrusion memory indication. **Turning the keyswitch through: BELL TEST to OFF will clear the LED memory and disarm the system.**

ADJUSTMENT AND TESTING:

IMPORTANT: Wait at least two minutes after connecting power before attempting to walk-test the unit.

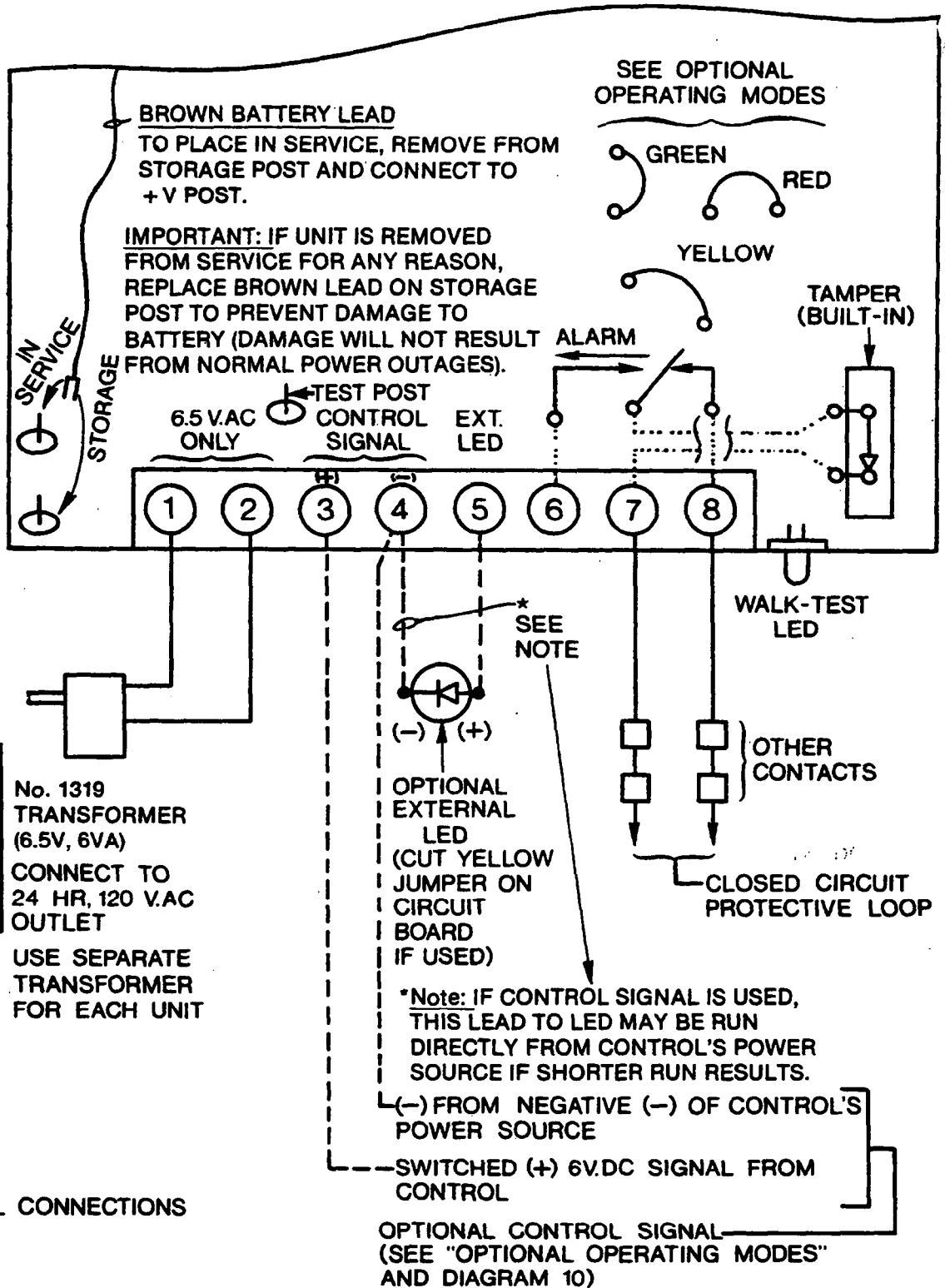
Alignment:

The adjustment and testing of the detector should be conducted with the protected area cleared of all people. In some business establishments it will be more convenient to do this after hours. The protective system's control should be OFF during the procedure to prevent unwanted alarms from being sounded.

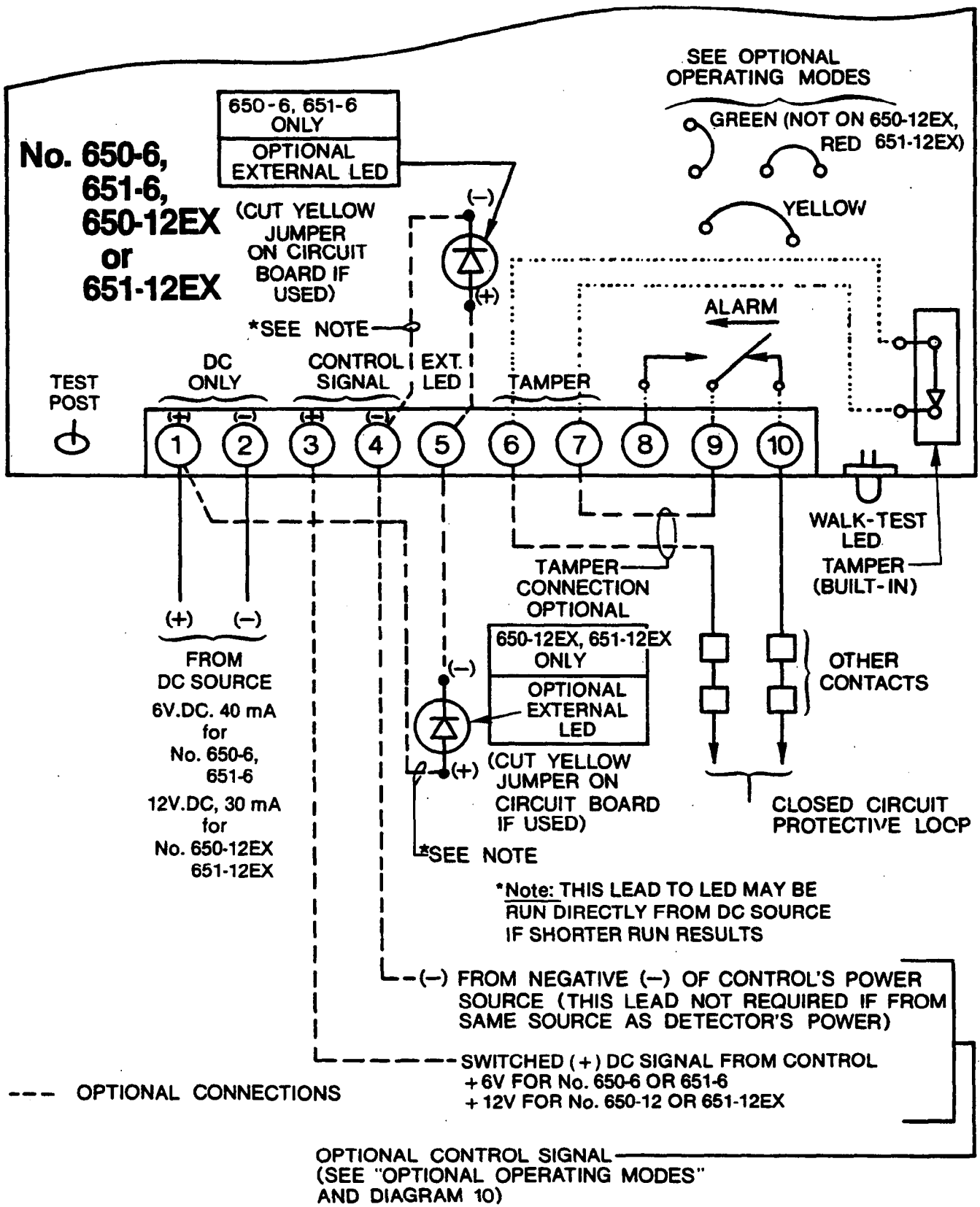
The alignment of the zones in the **horizontal** direction may be determined precisely by using the Zone Locator LED provided, as described next. **Note:** The Zone Locator light should not be used for **vertical** alignment. Follow the recommended mounting height vs. range Diagrams 3 and 5 for this purpose.

To use the Zone Locator LED, remove the small blue dot sticker from the front of the detector's optical head and insert the screw provided with the Zone Locator LED in the threaded hole found behind the sticker. Fit the LED atop the raised portion in front of the casting so that the LED fits into the groove provided, with the ground lug under the screw to secure the assembly. Connect the LED lead to terminal 1 of the detector. With power applied to the unit and the cover off, the LED's steady red light can be seen reflected in the facets of the unit's reflector mirror surface by an observer, about 10 feet (3.0m) away, looking back at the unit from each zone of protection. The red light will be in view **below** each zone's actual lower boundary, displace vertically

**No. 650
or
651**



**Diagram 8: CONNECTIONS, TERMINALS AND JUMPERS:
Nos. 650 AND 651 ONLY.**



**Diagram 9: CONNECTIONS, TERMINALS AND JUMPERS;
Nos. 650-6, 651-6, 650-12EX, 651-12EX ONLY**

by an amount that increases the farther the observer is from the unit. Although this image should not be used for vertical alignment, it is useful, however, in panning the unit to obtain best horizontal coverage and/or avoiding direct view, by the unit, of heat radiators, heating and ventilating registers, direct sunlight, etc. (Loosen the panning screw below the optical assembly while adjusting.)

When the desired aiming is obtained, tighten the panning screw firmly taking care not to disturb the alignment. Remove the Zone Locator LED, but leave its mounting screw in place.

Final Test:

Double-check all connections. Replace the front cover and secure holding screw. Walk-test unit with cover in place. Test operation by walking through the protective zones and observing walk-test LED. If necessary to obtain desired coverage, adjust the unit to the left or right (by temporarily loosening the panning screw) or adjust it up or down (via the vertical adjustment).

Test standby operation (Nos. 650 and 651 only) by unplugging the line transformer. Make sure that the battery in the No. 650 or 651 has had a chance to charge for at least an hour before checking. The system should continue to operate with the transformer unplugged; however, the walk-test LED will not function. If the unit fails to operate, the battery should be replaced (contact nearest Ademco Distribution Center).

Note: The absolute range of all Passive I.R. units is subject to variation because of different types of clothing, backgrounds, and ambient temperature changes. For this reason ensure that the most likely intruder routes are well within the protective zones and that walk-testing is carried out along these routes.

Meter Test (if required, for analyzing problem areas):

1. Remove the detector's cover.
2. Connect a DC voltmeter (or multimeter), 20K ohms per volt as follows:
 - a. Set the meter to its 2.5V.DC range.
 - b. Connect the meter's positive (+) test lead to the detector's TEST POST (located as shown in Diagram 8 or 9, depending upon the unit).
 - c. Connect the meter's negative (-) test lead to detector terminal 4.
3. Mask the detector's optics so that motion cannot be detected. (**Note:** Placing the optic's protective shipping foam over the mirror will not provide sufficient masking. Use of a handkerchief or sheet of paper in front of the mirror is suggested.)

The meter should indicate approximately 1.6V.DC (with a permissible normal fluctuation of approximately 0.1V.)
4. Remove the mask covering the optics, remain motionless and allow time for the meter to settle. Motion into any of the detector's zones will cause the meter to deflect above or below the nominal level. A meter variation of ± 0.5 volt will trip the unit, causing its LED to illuminate and its alarm relay to transfer.

MAINTAINING PROPER OPERATION AND COVERAGE:

In order to maintain the detector in proper working condition, it is important that the following be observed by the user.

1. Power should be provided at all times.
 - a. (Nos. 650, 651 Only): The plug-in transformer should be kept in its socket and continuous 120V.AC supplied to it so that the standby battery remains charged. **Note:** Loss of battery power will result in an alarm signal.
 - b. (Nos. 650-6, 651-6 and 650-12EX, 651-12EX Only): The unit's DC source should have standby power available for at least 4 hrs of operation during emergencies.
2. Units should never be re-aimed or relocated without the advice or assistance of the alarm service company.
3. The physical surroundings of the protected area should not be changed. If furniture or stock is moved, or air-conditioning or additional heating is installed, the system may have to be readjusted by the alarm service company.
4. Walk-tests should be conducted frequently (at least monthly) to confirm continued proper coverage by each detector.

TROUBLESHOOTING:

The following assumes a detector operating "as received". If an optional operating mode has been selected, relay and/or LED operation may vary, depending upon the option. It is advisable to reconnect cut option jumpers when troubleshooting.

Trouble 1: UNIT GOES INTO ALARM INTERMITTENTLY FOR NO APPARENT REASON AND WALK-TEST LIGHT GOES ON WHEN ALARM CONDITION EXISTS.

CAUSE

- A. Rapid change in IR level in one of the zones.**
Check for electric or gas heaters, open flames, electric arcs, or any objects which may be partially in a zone which can change temperature rapidly.
- B. Drafts are creating motion in drapes, display material or overhead lighting fixtures.**
- C. Birds or other small animals are entering area (particularly in warehouses.)**
- D. Wrong transformer used.**

REMEDY

- Identify source of IR or temperature change.**
Use zone locator LED to confirm and inspect zone locations. Re-position zones so that source of problem is no longer in a zone, by using locator LED.
- Locate source of motion.** Eliminate motion or aim zones away from source if necessary. Walk-test unit after adjustment to confirm coverage.
- Check for and eliminate all possible entry points for birds, cats, dogs, rodents, etc.** Contact exterminator if necessary.
- Use only No. 1319 Transformer provided.**

Trouble 2: UNIT GOES INTO ALARM INTERMITTENTLY FOR NO APPARENT REASON AND WALK-TEST LIGHT DOES NOT GO ON WHEN ALARM CONDITION EXISTS.

CAUSE

- A. (Nos. 650 and 651 only) Transformer not plugged into a 24 hour AC outlet.** With no AC supplied, the unit's standby battery may be depleted to a point where the alarm relay will drop into the alarm state. When AC is restored the battery recharges and the process repeats when AC is again removed. Note: Walk-test LED is designed to remain off during AC power interruption to indicate that AC is absent.
- B. (Nos. 650 and 651 only) Transformer or wiring malfunction which deprives detector of AC supply.**
- C. (Nos. 650-6, 651-6, 650-12EX, 651-12EX only) DC voltage supply to detector from panel or power supply inadequate or absent. PROPER POLARITY ON DC POWERED UNITS MUST BE OBSERVED.**

REMEDY

- Check for presence of AC for 24 hours per day on outlet.** Do not use switched outlets or outlets controlled by timers.
- Disconnect AC power wires from detector and check for presence of 6.5V.AC at output terminals of transformer.** If absent, replace transformer. If present, check for 6.5V.AC across power wires at detector. Check wires for opens and shorts.
- Check for proper DC voltage at terminals of detector.** If absent, check for proper voltage at panel or power supply terminals with wiring disconnected. If present, wiring to detector is faulted. Check for open and shorted conditions in wiring. If proper DC voltage is absent, consult instructions for panel or power supply.

Trouble 3: RELAY OPERATES NORMALLY BUT WALK-TEST LIGHT DOES NOT OPERATE.

CAUSE

- A. (Nos. 650 and 651 only) System operating from standby battery (AC absent) and battery charge not yet depleted.**
- B. LED malfunction.** Check for broken or shorted leads.
- C. YELLOW jumper has been cut but no external LED is used.**

REMEDY

- See Trouble 2 and CAUSE/REMEDY 2A.**
- Return Unit to Ademco for service (obtain Return Authorization Number from Ademco before returning).**
- Reconnect jumper.**

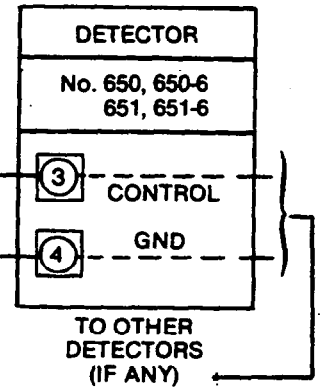
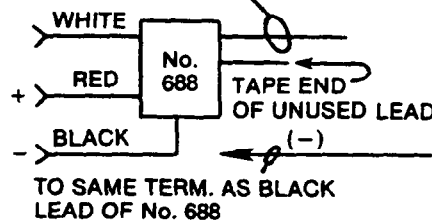
ALARM PROCESSING CENTERS			DELUXE CONTROLS
Nos. 1021, 4021 (RESIDENTIAL)	No. 1022	No. 1023	Nos. 1000 * 1003 1005 1020
(17) (UPPER)	ORANGE	PIN #4	WHITE
- (6) (LOWER)	- (13)	- (20)	- (1)

ALARM PROCESSING CENTERS	COMBO. BURG/FIRE CONTROLS	ALARM LOGIC CENTERS
Nos. 1024, 1025, **1026, **1028	Nos. 330R THRU 342R SERIES	Nos. 4080 4080XL
(11) → (14) → (20) → TERMINAL POSTS	(16) (13) + (3) - (4) PWR SUPPLY	D4 YEL *** D6 BLUE (+) D1 BRN (-)

ADD RESISTOR, ANY VALUE FROM 2K THRU 12K OHM, 1/2 W. MIN.

0V WHILE ARMED
+6V WHILE DISARMED

0V WHILE ARMED
+6V WHILE DISARMED
USE ORANGE WITH APC'S
USE VIOLET WITH OTHER CONTROLS SHOWN.

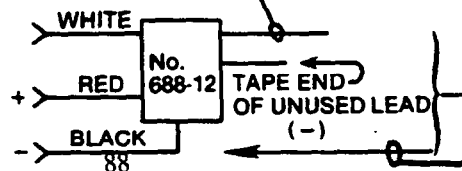


ALARM PROCESSING CENTERS		
Nos. 1021-12, 4021-12 (RESIDENTIAL)	No. 1023-12	No. 1022-12
(17) (UPPER)	PIN #4	ORANGE
- (6) (LOWER)	- (20)	- (13)

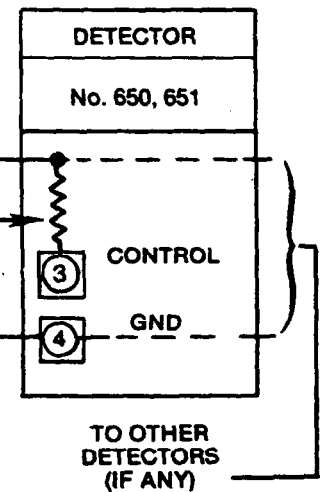
0V WHILE ARMED
+6V WHILE DISARMED

ADD RESISTOR,
10K OHM, 1/4 W. MIN.
AT EACH DETECTOR

0V WHILE ARMED
+12V WHILE DISARMED
USE ORANGE WITH APCs
USE VIOLET WITH OTHER CONTROLS SHOWN



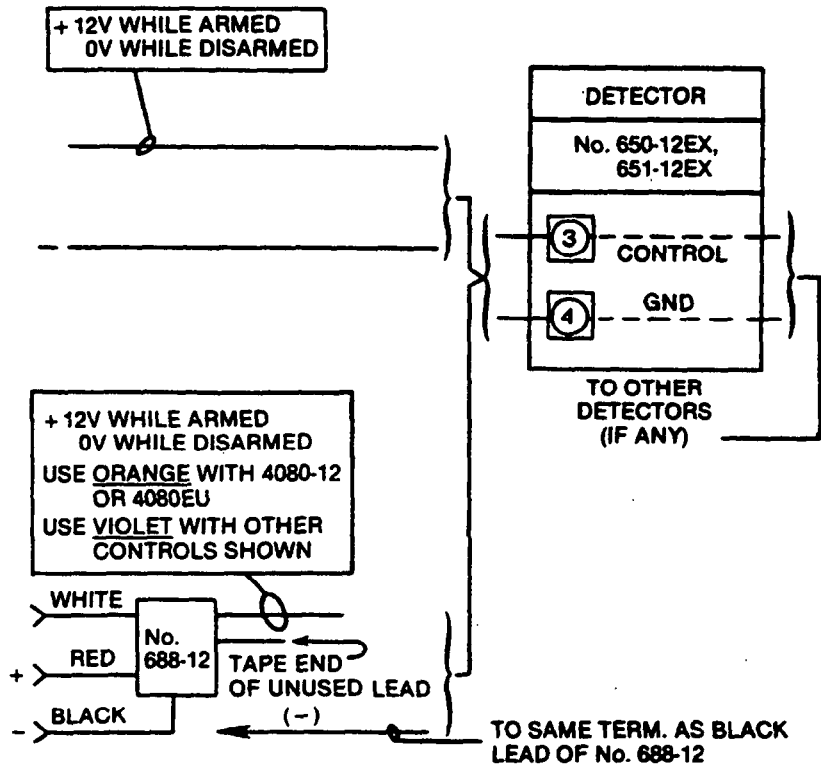
TO SAME TERM. AS BLACK LEAD OF No. 688-12



APCs	ALARM LOGIC CENTERS	
Nos. 1025-12, 1025EX12	Nos. 4080-12 4080EU	No. 4090
(11) → + (14) → - (20) →	D4 YEL *** D6 BLUE (+) D1 BRN (-)	(A6) + (C2) - (C13)

ALARM PROCESSING CENTERS		ALARM LOGI-CENTER
Nos. 1021-12, 4021-12 (RESIDENTIAL)	No. 1023-12	No. 4090
(16) (UPPER) - (6) (LOWER)	PIN #3 	(A6) - (C13)

ALARM PROCESSING CENTERS		ALARM LOGI-CENTERS
No. 1022-12	Nos. 1025-12, 1025EX12	Nos. 4080-12, 4080EU
ORANGE + (14) - (13)	(11) → + (14) → - (20) →	D4 YEL *** D6 BLUE (+) D1 BRN (-)



- * Nos. 1000, 1003, 1005, 1020: These controls may be used to provide DC power as well for "6" type detectors, only if a power source, such as a No. 492 or 493 (or 487 or 488 type) Power Supply is used for the control.
- ** Nos. 1026, 1028: These controls may not be used to provide 6V. DC power for "6" type detectors. A separate power source, such as a No. 492 or 493 (or 487 or 488 type) Power Supply would be required for detector power.
- *** Nos. 4080, 4080XL, 4080-12, 4080EU: Terminal D4 output is a closing supplementary output trigger (+6V) which is produced at arming time only subsequently to the opening and closing of the entry/exit delay door.

Diagram 10: TYPICAL SOURCES OF SWITCHED (+) CONTROL VOLTAGE SIGNAL FOR OPTIONS

DETECTOR OPTION PROGRAMMING SUMMARY (PROPER CONTROL VOLTAGE SIGNAL REQUIRED, SEE INSTRUCTIONS)					
OPTION	JUMPERS CUT	DETECTOR FUNCTION			
		CONTROL ARMED		CONTROL DISARMED	
AS RECEIVED	NONE (CONTROL VOLTAGE NOT USED)	LED: ACTIVE	RELAY: INACTIVE	LED: ACTIVE	RELAY: ACTIVE
DAY RELAY DISABLE	NONE	LED: INACTIVE	RELAY: ACTIVE (NORMAL)	LED: INACTIVE	RELAY: INACTIVE
BRIGHT LED AND DAY RELAY DISABLE	GREEN	LED: INACTIVE (OFF)	RELAY: INACTIVE	LED: INACTIVE	RELAY: INACTIVE
INTRUSION (LED) MEMORY	GREEN AND RED	LED: INACTIVE (OFF)	RELAY: INACTIVE	LED: MEMORY AND AFTER RESET (WALK-TEST)	RELAY: INACTIVE

Nos. 650, 650-6, 651, 651-6

DETECTOR OPTION PROGRAMMING SUMMARY (PROPER CONTROL VOLTAGE SIGNAL REQUIRED, SEE INSTRUCTIONS)					
OPTION	JUMPERS CUT	DETECTOR FUNCTION			
		CONTROL ARMED		CONTROL DISARMED	
AS RECEIVED	NONE (CONTROL VOLTAGE NOT USED)	LED: ACTIVE	RELAY: INACTIVE	LED: ACTIVE (WALK-TEST)	RELAY: ACTIVE
BRIGHT LED DISABLE	NONE	LED: INACTIVE	RELAY: ACTIVE (NORMAL)	LED: INACTIVE	RELAY: ACTIVE
INTRUSION (LED) MEMORY	GREEN AND RED	LED: INACTIVE (OFF)	RELAY: INACTIVE	LED: MEMORY AND AFTER RESET (WALK-TEST)	RELAY: INACTIVE

Nos. 650-12EX, 651-12EX

Diagram 11: DETECTOR OPTION PROGRAMMING SUMMARIES

Trouble 4: AREA OF COVERAGE CHANGES.

CAUSE

A. Customer has repositioned furniture or equipment in premises.

B. Mounting surface is unstable. A few degrees vertical shift can change range substantially.

REMEDY

Caution customer that changes in layout can affect coverage. Re-aim or relocate the unit according to installation instructions. Be certain that unit has not been tampered with.

Mount on secure surface.

Trouble 5: UNIT DOES NOT APPEAR TO BE OPERATING.

CAUSE

A. Unit is not receiving power.

REMEDY

Check for presence of appropriate input voltage at terminals of unit.

(Nos. 650 and 651 only) Be certain that unit's battery lead has been moved from its STORAGE (shipping/storage) POST to its active + V.DC POST.

IMPORTANT: Before any equipment is returned to Ademco for service, a Return Authorization Number should first be obtained from the nearest Ademco Distribution Center.

If it becomes necessary to return a unit for repair, the optical head and reflector assembly within the unit should be cushioned by surrounding it with soft packing material (such as tissue, newspaper, foam or plastic bubbles) to protect it from undue stress during shipment. Take care not to touch the reflector or sensor surfaces.

GENERAL SPECIFICATIONS:

	<u>No. 650</u> <u>No. 651</u>	<u>No. 650-6</u> <u>No. 651-6</u>	<u>No. 650-12EX</u> <u>No. 651-12EX</u>
Physical:	Width: 4-1/16" (10.3cm)	(same)	(same)
	Height: 5-11/16" (14.5cm)	(same)	(same)
	Depth: 2-7/8" (7.3cm)	(same)	(same)
Electrical:	Voltage: *6.5V.AC from 1319 Plug-in Transformer (Supplied)	6V.DC	12V.DC
	Current: 0.6A	40 mA	30mA
	Standby: Up to 10 hrs. with built-in rechargeable 2V lead-acid cell, 2.5 AH (supplied) (Access to battery is at rear of unit.)		None built-in. Power source used should be able to provide at least 4 hrs. of standby power.
	Alarm Relay Contact Rating: 1.0A, 30V.DC/120V.AC	(same)	(same)

***CAUTION:** Use separate No. 1319 transformer supplied. Do not operate other equipment simultaneously from the same transformer. Damage to the transformer and/or equipment could result.

Use of a No. 1320 Transformer will damage the equipment.